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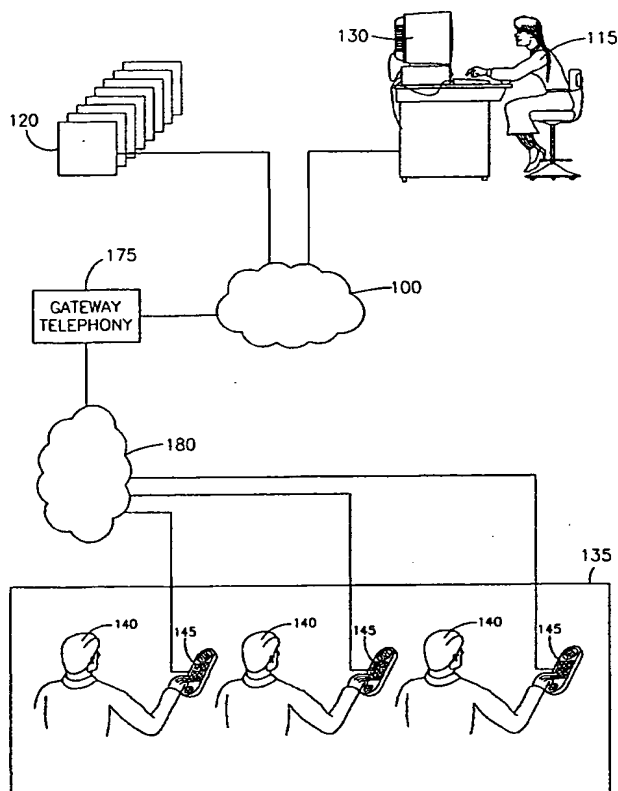
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[Continued on next page]

(54) Title: **METHOD AND APPARATUS FOR REMOTE CONTROL OF A WEBSITE VISIT**



(57) Abstract: A method and apparatus for remote control of a website (120) visit. The method consists of receiving DTMF signals transmitted from a remote source over a network (100), where the DTMF signals code for a website (120) command. The commands coded by the DTMF signals are then executed so as to control the website (120) visit.

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## **METHOD AND APPARATUS FOR REMOTE CONTROL OF A WEBSITE VISIT**

### **FIELD OF THE INVENTION**

The present invention relates generally to methods and apparatuses for interfacing with the Internet.

### **BACKGROUND OF THE INVENTION**

5       An Internet Website typically consists of a large number of web pages. A surfer to a website is initially presented with a menu describing the contents of some of the web pages at the site. For example, the Website may be of a publishing company offering for sale various goods such as books, musical recordings, posters, etc. The surfer is prompted to select a web page from the  
10 menu providing the information he is seeking. If for example, the surfer selects "books" from the menu, he will arrive at a web page where he is presented with another menu prompting him to select a web page providing more specific information of interest to him, for example, books of a particular genre.

      This process of selecting a web page from successive menus ideally  
15 continues until the surfer has arrived at the ultimate web page providing the specific information he is seeking. Unfortunately, however, quite often the surfer is bewildered by the maze of web pages he must navigate through in order to arrive at the ultimate page. An inappropriate page selection from a menu at one stage may lead the surfer astray, possibly irretrievably. Out of frustration, the  
20 surfer may just decide to leave the site altogether. For a commercial Website, the loss of customers due to their inability to navigate to the ultimate page they are seeking obviously represents an unnecessary loss of potential revenue.

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In view of this problem, some websites allow a surfer to contact a human agent of the site by means of a two-way audio connection. The connection is transmitted partly over the internet via a "voice over Internet Protocol" (VoIP) connection, and partly over a public switched telephone network (PSTN). The connection may be initiated by the surfer clicking a button on his screen. The surfer may describe to the agent what information he is seeking at the site. The agent, by means of audio commands, guides the surfer through the site by instructing him as to the selection he must make from each menu in order to arrive, ultimately, at the page he is seeking. Since the surfer may be unable to accurately describe to the agent his location in the site and what he is looking for at the website, misunderstandings may occur, so that even with the agent's help the surfer may not obtain the information or service he is seeking.

A dual-tone multiple-frequency (DTMF) signal is the additive combination of two constant amplitude sinusoidal components. DTMF signals are used *inter alia* for representing telephone numbers and other signaling functions within a telephone system including interactive voice response. For example, the signal generated by depressing "1" on the telephone keypad is the sum of a 697 Hz and a 1209 Hz sine wave, and the signal generated by depressing the "5" is the sum of a 770 Hz and a 1336 Hz sine wave.

DTMF signals have been used in interfacing with the Internet. U.S. Patent No. 5,761,280 discloses browsing on the internet at a computer terminal using DTMF signals generated by depressing keys on a telephone key pad located near the computer terminal. U.S. Patent No. 5,945,989 discloses modification of a website using DTMF signals generated by an individual depressing keys on a telephone keypad connected by a Public Switched Telephone Network (PSTN) to the website server. Neither of these inventions is relevant to the problem of guiding a surfer through a website.

There is therefore a need in the art for a method to assist a surfer to a website in navigating within the site that reduces or eliminates the disadvantages of the known methods.

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## SUMMARY OF THE INVENTION

While the present invention will be described primarily in relation to the Internet and the World Wide Web, it is also applicable to Intranets or other public networks that employ or could employ an Internet Protocol and/or a graphical user interface (GUI).

The invention provides a system that allows a remotely located agent to control aspects of a surfer's visit through a website. The invention is invoked, for example, when the surfer contacts the website's call center and requests assistance from an agent. The invention allows the agent to provide a rapid response to the surfer's request.

In response to a request from the surfer, the agent issues commands to the surfer's computer. A typical command might be, for example, that the web page currently displayed on the surfer's computer screen be replaced with another web page. The commands are coded in the form of DTMF signals that are generated when the agent depresses keys on a telephone keypad. The signals are initially transmitted from the agent's telephone over a PSTN to a computer telephony/Internet (CT/I) interface that transmits the DTMF signals to the surfer's computer over the Internet. The signals are decoded by the computer into commands in accordance with data that were stored in the computer when the surfer entered the site. The data assign each of a plurality of commands to a unique DTMF signal. The commands are transmitted over the Internet to the website, as is known *per se*, for example in Hypertext Markup Language (HTML). The website, in turn, executes the commands as if they had been initiated by the surfer and not by the agent.

Any type of command that can be stored in the application generator's database can be issued by the agent. Examples of such commands include the following:

- (1) Changing the web page appearing on the surfer's screen. For example, the surfer may tell the agent what information he is seeking at the website, and in response, the agent will have the web page

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containing this information displayed on the surfer's screen. The agent may accomplish this without having to display on the surfer's screen any intermediate pages, for example, those pages that the surfer would have to navigate through to arrive at the new page without the agent's assistance.

- (2) Graphical modification of a web page appearing on the surfer's screen. For example, the agent might highlight a portion of the web page in order to draw the surfer's attention to information in that portion of the page.
- (3) Generating an audio message or signal possibly coordinated with a graphical modification.
- (4) Inputting data for the surfer into an e-form appearing on the surfer's screen and submitting the form.

The computer telephony/Internet (CT/I) architecture is an interface between the Public Switched Telephone Network (PSTN) and the Internet. The CT/I architecture allows a call agent without computer telephony hardware to take advantage of the TCP/IP open communication protocol to issue commands in the form of DTMF signals to the surfer's computer.

The invention thus provides an apparatus for remote control of a website visit configured to carry out steps of:

- a. receiving one or more DTMF signals transmitted from a remote source over a network, the DTMF signals coding for one or more commands and
- b. executing the commands coded by the DTMF signals so as to control the website visit.

The invention further provides a method for remote control of a website visit, comprising steps of:

- a. receiving one or more DTMF signals transmitted from a remote source over a network, the DTMF signals coding for one or more commands, and
- b. executing the commands coded by the DTMF signals so as to control the website visit.

## BRIEF DESCRIPTION OF THE DRAWINGS

In order to understand the invention and to see how it may be carried out in practice, a preferred embodiment will now be described, by way of non-limiting example only, with reference to the accompanying drawings, in which:

**Fig. 1** shows an exemplary architecture of the present invention; and.

**Fig 2** shows a flow chart diagram of the method of the invention.

## DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Fig. 1 shows an exemplary architecture that is used with in accordance with one embodiment of the invention. A surfer **115** is connected to a website **120** over the Internet represented a cloud **100**.

At a call center **135** is a plurality of human agents **140** each of which is equipped with a touch-tone telephone **145**. When the surfer **115** wishes to contact the call center **135**, an audio connection is established from the surfer's computer **130** to the call agent **140**. Between the surfer's computer **130** and the CT/I interface **175**, the connection is over the Internet **100**. Between the CT/I interface **175** and the agent's telephone **145**, the connection being over the PSTN represented by the cloud **180**.

When an agent **140** wishes to issue a command to the website **120**, he depresses a DTMF signal coding for the command on his telephone's **145** keypad. The DTMF signal is transmitted over the PSTN **180** to the CT/I interface **175** and is then transmitted over the Internet **100** to the surfer's computer **130**. The computer **130** then decodes the DTMF signal **180** according to data that was stored in the computer **130** when the surfer logged onto the website **120**. The computer then issues the appropriate command to the website **120** over the Internet **100**. The website **120** then executes the command as if it had been initiated by the surfer **115** and not the agent **140**. If, for example, the command

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was to display a particular webpage on the screen of the computer 130, the surfer 115 would then observe the webpage on his computer screen.

Fig. 2 shows a flow chart diagram of the method of controlling a surfer's visit to a website in accordance with the invention. At step 200 a surfer 115 logs onto a website 120 using his computer 130. The website 120 provides webpages at step 205, and at step 210 the webpages are loaded onto the browser of the computer 130. When the surfer 115 wishes to contact the website's call center 135, a voice over Internet Protocol connection is established over the Internet 100 between the computer 130 and the CT/I interface 175 (step 215). In step 220, the connection is continued from the CT/I interface 175 to the agent's telephone 145 is over the PSTN 180. The agent's telephone rings (step 225) and the agent 140 and the surfer 115 then converse over the audio connection between them (step 230).

When the agent 140 wishes to issue a command to the website 120, he depresses the DTMF signal code for the command on his telephone's 145 keypad (step 235). In step 240, the DTMF signal is transmitted over the PSTN 180 to the CT/I interface 175. The CT/I sends the DTMF signals over the Internet 100 to the surfer's computer 130 (step 245). In step 250, the computer 130 receives the DTMF signals and in step 255 the computer 130 decodes the signals and issues the appropriate command to the website 120 over the Internet 100. The website 120 then executes the command in step 260. In step 270 execution of the command is observed on the screen of computer 130.

The present invention has been described with a certain degree of particularity but it should be understood that various modifications and alterations may be made without departing from the scope or spirit of the invention as defined by the following claims. In the method claims that follow, alphabetic characters used to designate claim steps are provided for convenience only and do not imply any particular order of performing the steps.



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**CLAIMS:**

1. An apparatus for remote control of a website visit configured to carry out steps of:
  - a receiving one or more DTMF signals transmitted from a remote source over a network, the DTMF signals coding for one or more commands, and
  - b executing the commands coded by the DTMF signals so as to control the website visit.
2. The apparatus according to Claim 1 further comprising a DTMF signal generator.
3. The apparatus according to Claim 2 wherein the DTMF signal generator is a touch-tone telephone.
4. The apparatus according to any one of the previous claims, wherein the network contains a public switched telephone network and a computer network.
5. The apparatus according to any one of the previous claims being further configured for receiving and storing data.
6. The apparatus according to Claim 5, wherein the stored data consist of a code assigning a unique DTMF signal to each of one or more commands.
7. The apparatus according to any one of the previous claims further comprising a computer telephony/Internet interface configured to convert a DTMF signal transmitted over a public switched telephone network into an equivalent Internet Protocol signal.
8. The apparatus according to Claim 6 further configured to carry out a step of decoding a DTMF signal by executing the command assigned to the DTMF signal.
9. A method for remote control of a website visit, comprising steps of:
  - a receiving one or more DTMF signals transmitted from a remote source over a network, the DTMF signals coding for one or more commands, and

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b     executing the commands coded by the DTMF signals so as to control the website visit.

10.    The method according to Claim 9 further comprising a step of generating one or more DTMF signals and transmitting the DTMF signals over the network.
11.    The method according to Claim 10 wherein the step of generating one or more DTMF signals involves depressing buttons on the keypad of a touch-tone telephone.
12.    The method according to any one of the previous claims wherein the network contains a public switched telephone network and a computer network.
13.    The method according to any one of Claims 9 to 12 further comprising steps of receiving and storing data.
14.    The method according to Claim 13, wherein the data consist of a code assigning a unique DTMF signal to each of one or more commands.
15.    The method according to any one of Claims 9 to 14 further comprising a step of converting a DTMF signal into an equivalent Internet Protocol signal.
16.    A method according to Claims 14 further comprising a step of decoding a DTMF signal by executing the command assigned to the DTMF signal.

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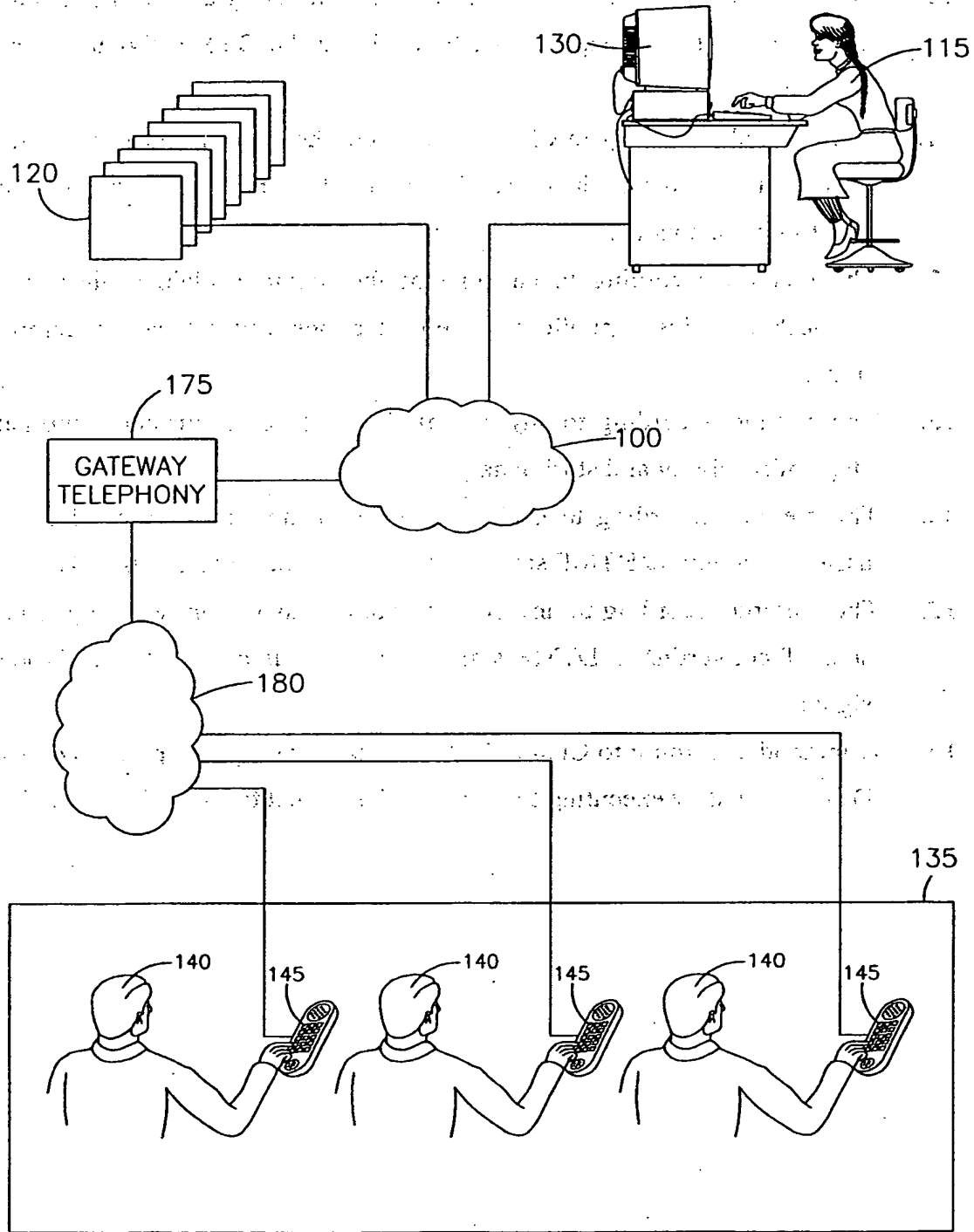


FIG.1

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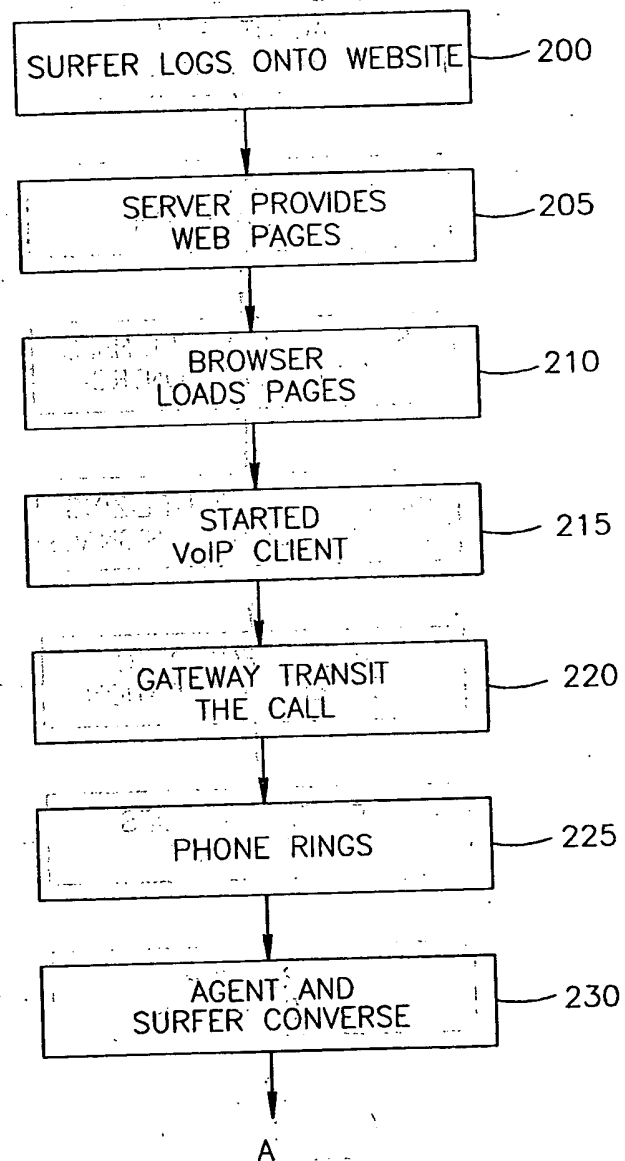


FIG.2A

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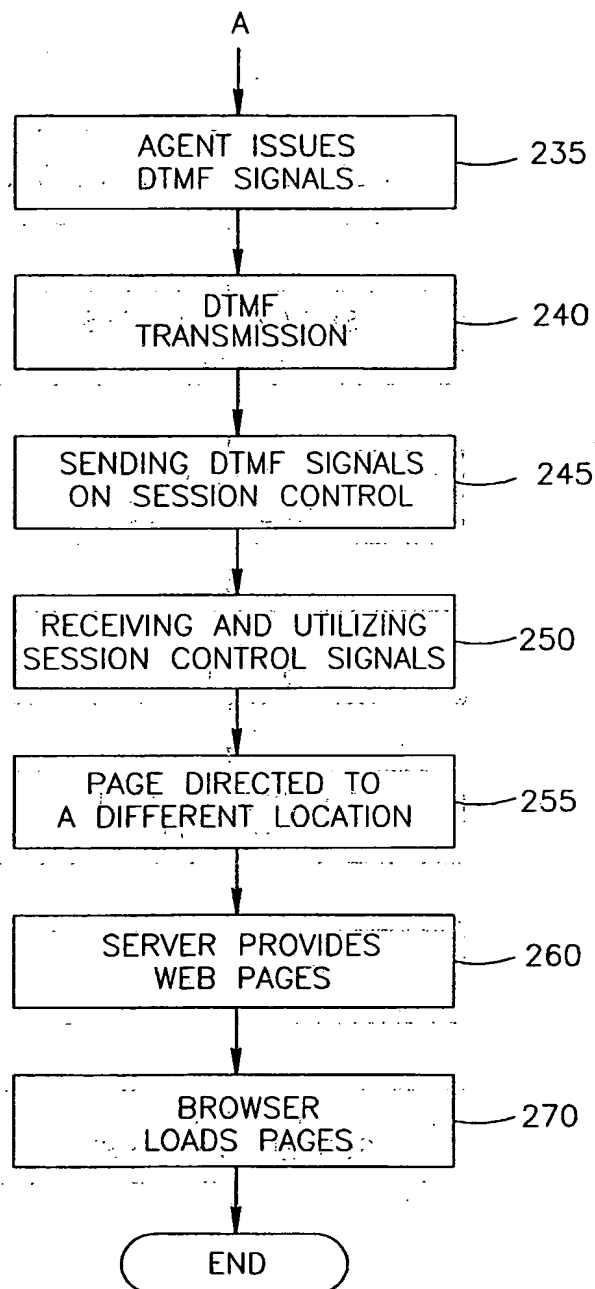


FIG.2B

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IL00/00258

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 13/00

US CL : 709/217, 219, 229, 246; 379/88.17, 88.23

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 709/217, 219, 229, 246; 379/88.17, 88.23

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EAST, IEEE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,884,262 A (WISE et al) 16 March 1999, col. 2, lines 2-17, col. 6, lines 14-30, col. 7, line 56 - col. 8, line 13.	1-16
Y	US 5,953,392 A (RHIE et al) 14 September 1999, col. 2, lines 13-24.	1-16
A	MILLER, P.A.; TURCU, P.N. Generic signaling protocol: switching, networking, and interworking IEEE Transactions on Communications. May 1992. Vol. 40. Issue 5. pages 967-979.	1-16
A	KOYUNCU, B. PC remote control of appliances by using telephone lines. IEEE Transactions on Consumer Electronics. February 1995. Vol. 41. Issue 1. pages 201-209.	1-16

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*A* document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*E* earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
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*O* document referring to an oral disclosure, use, exhibition or other means	
*P* document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search  
01 OCTOBER 2000

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## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IL00/00258

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>COSKUN, I.; ARDAM, H. A remote controller for home and office appliances by telephone IEEE Transactions on Consumer Electronics. November 1998. Vol. 44. Issue 4. pages 1291-1297.</p>	1-16

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